AMENDMENTS TO THE SPECIFICATION

Kindly replace the paragraph that begins at page 5, line 21 and ends at page 6, line 5 of the clean substitute specification with the following amended paragraph:

The joint area is heated to an initial joining temperature, wherein the joining material softens and fills physical discontinuities between the surfaces of the base materials being joined. The materials can be held at this temperature for about 15 minutes ~~a short interval~~. The joint area is then rapidly heated to the reactive temperature of the joining material and the base materials. The joint area is maintained at the reactive temperature for a short interval to allow for the reaction and interdiffusion of the base and joining materials and for the subsequent formation of a homogenous joint region.

Kindly replace the paragraph that begins at page 11, line 3 and ends at page 11, line 12 of the clean substitute specification with the following amended paragraph:

Referring now to Figure 2 and with continued reference to Figure 5, localized microwave beam heating is applied to the joint area 160 of the base materials 150, 170. The joint is heated to an initial joining temperature. As shown in figure 2, at the initial joining temperature the joining material 140 softens and fills physical discontinuities between the surfaces of the base materials 150, 170 being joined. In the example embodiment, the initial joining temperature is in the range of approximately 800 to 1200 degrees Centigrade depending on the materials selected. The initial joining temperature is selected as a temperature at which the frit softens substantially. The temperature is held for ~~a short interval, for example, for~~ about 15 minutes for alumina material joined by a reactive oxide frit.

Kindly replace the paragraph that begins at page 11, line 13 and ends at page 11, line 20 of the clean substitute specification with the following amended paragraph:

Next the joint area is rapidly heated to the reactive temperature of the joining material and the base materials. The reactive temperature is defined as the temperature at which the joining material and the base materials chemically react. This temperature is generally greater than the initial joining temperature. The joint area is heated from the initial joining temperature

to the reactive temperature at a rate of approximately 50 to 100 degrees Centigrade per minute. A suitable rate is about 100 degrees Centigrade per minute~~, or greater~~. In the example embodiment, the reactive temperature is approximately 1400 to 1700 degrees Centigrade.

Kindly replace the paragraph that begins at page 13, line 3 and ends at page 13, line 10 of the clean substitute specification with the following amended paragraph:

The joint area is maintained at the recrystallization temperature for approximately 30 minutes, or until the joint area forms a stable physical and thermal structure. Once the joint area forms stable physical and thermal structures, the new assembly is then allowed to cool to room temperature. This process may be through atmospheric cooling for example ~~or through some type of forced cooling~~, with the only requirement ~~is~~ being that the assembly is not cooled so quickly as to cause structural or chemical degradation of the base and joint materials. The assembly can be cooled at about 50 degrees C per minute, for example.

Kindly cancel the paragraph that begins at page 18, line 7, and ends at page 18, line 13:

~~Figure 8 shows a reactive oxide glass braze joint in alumina with heat treatment to recrystallize the joint region, accordance with an embodiment of the invention. Figure 9 shows a optical micrograph illustration of a joint in high purity alumina with heat treatment to recrystallize the joint region, in accordance with an embodiment of the invention. Figure 10 shows a scanning electron micrograph illustration of a joint region in high purity alumina with heat treatment to recrystallize the joint region, in accordance with an embodiment of the invention.~~